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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,799	01/25/2006	Yasuhiro Kajihara	ACT-004	9645

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EXAMINER	
LAU, JONATHAN S	

ART UNIT	PAPER NUMBER
1623	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/565,799	KAJIHARA ET AL.	
	Examiner	Art Unit	
	Jonathan S. Lau	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 November 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4 and 6-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *4,6 and 7* is/are allowed.

6)☒ Claim(s) *8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is responsive to Applicant's Amendment and Remarks, filed 23 Nov 2009, in which claims 4 and 7 are amended to change the scope and breadth of the claim, and claims 1-3 are canceled.

This application is the national stage entry of PCT/JP04/11036, filed 27 Jul 2004; and claims benefit of foreign priority document JAPAN 2003-202594, filed 28 Jul 2003. At present an English language translation of this foreign priority document is not of record.

Claims 4 and 6-8 are pending in the current application and examined on the merits herein.

Rejections Withdrawn

Applicant's Amendment, filed 23 Nov 2009, with respect to claims 4 and 6 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement has been fully considered and is persuasive, as amended claim 4 does not recite "resistant to sugar hydrolase". Claim 6 depends from claim 4 and incorporates all limitations therein.

This rejection has been **withdrawn**.

Applicant's Amendment, filed 23 Nov 2009, with respect to claims 4 and 6-8 rejected under 35 U.S.C. 112, second paragraph, as being indefinite has been fully considered and is persuasive, as amended claim 4 recites the essential structural cooperative relationships of elements, and claim 6 depends from claim 4 and incorporates all limitations therein; and amended claim 4 does not recite the relative term "resistant to sugar hydrolase".

This rejection has been **withdrawn**.

Applicant's Amendment, filed 23 Nov 2009, with respect to claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Rademacher et al. (US Patent 5,280,113, issued 18 Jan 1994, of record) in view of Wong et al. (Biochem J., 1994, 300, p843-850, provided by Applicant in IDS filed 06 Jul 2006) has been fully considered and is persuasive, as amended claim 4 recites "wherein the glycopeptides has about 12 times higher resistance to Peptide-N Glycosidase F (PNGase F) than a glycopeptide comprising an asparagine-linked oligosaccharide". Rademacher et al. in view of Wong et al. does not teach the reactivity regarding PNGase F of the glycopeptides taught by Rademacher et al. in view of Wong. Rademacher et al. in view of Wong et al. does not provide guidance to one of ordinary skill in the art to reasonably conclude that higher resistance to PNGase F is a necessarily present or inherent characteristic of the glycopeptides taught by Rademacher et al. in view of Wong. Rademacher et al. in view of Wong et al. does not provide guidance for selecting the genus of glycopeptides that

has about 12 times higher resistance to PNGase F. Therefore Rademacher et al. in view of Wong et al. does not teach or fairly suggest the instant invention as claimed.

This rejection has been **withdrawn**.

Applicant's Amendment, filed 23 Nov 2009, with respect to claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Rademacher et al. (US Patent 5,280,113, issued 18 Jan 1994, of record) in view of Wong et al. (Biochem J., 1994, 300, p843-850, provided by Applicant in IDS filed 06 Jul 2006) and further in view of Wright et al. (Trends in Biotechnology, 1997, 15, p26-32, of record) has been fully considered and is persuasive, as Rademacher et al. in view of Wong et al. does not teach or fairly suggest the instant invention of claim 4 as detailed above and Wright et al. does not remedy the teaching of Rademacher et al. in view of Wong et al.

This rejection has been **withdrawn**.

Applicant's Amendment, filed 23 Nov 2009, with respect to claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Rademacher et al. (US Patent 5,280,113, issued 18 Jan 1994, of record) in view of Wong et al. (Biochem J., 1994, 300, p843-850, provided by Applicant in IDS filed 06 Jul 2006) and further in view of Lee et al. (US Patent 5,807,943, issued 15 Sep 1998, of record) has been fully considered and is persuasive, as Rademacher et al. in view of Wong et al. and further in view of Lee et al. does not teach or fairly suggest the method of cleaving an asparagine-linked oligosaccharide of a glycopeptide from a peptide by the specific enzyme PNGase F.

This rejection has been **withdrawn**.

The following are modified grounds of rejection necessitated by Applicant's Amendment, filed 23 Nov 2009, in which claims 4 and 7 are amended to change the scope and breadth of the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Amended Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rademacher et al. (US Patent 5,280,113, issued 18 Jan 1994, of record) in view of Wong et al. (Biochem J., 1994, 300, p843-850, provided by Applicant in IDS filed 06 Jul

2006) and further in view of Lee et al. (US Patent 5,807,943, issued 15 Sep 1998, cited in PTO-892), and further in view of Wright et al. (Trends in Biotechnology, 1997, 15, p26-32, of record).

Rademacher discloses glycoconjugates formed by the process of bonding to an N-haloacetylated glycosamine (column 5, lines 5-17). Rademacher discloses the process of forming a glycopeptide by conjugating the compound Galβ1-4GlcNAcβ1-2Manα1-6(Galβ1-4GlcNAcβ1-2Manα1-3)-Manβ1-4GlcNAcβ1-4GlcNAc (column 22, lines 55-65), corresponding to the instant formula (1) wherein R^2 and R^3 are each a group of instant formula (3). Rademacher discloses the haloacetylated glycosylamines reacted with a thiol R'SH to form a thioether (spanning column 12, lines 35-65 and column 13, lines 1-10). The haloacetylation of the glycosamine of compound Galβ1-4GlcNAcβ1-2Manα1-6(Galβ1-4GlcNAcβ1-2Manα1-3)-Manβ1-4GlcNAcβ1-4GlcNAc gives the oligosaccharide of instant claim 4 in which R^1 is –NH-(CO)-$(CH_2)_1$-CH_2X and R^2 and R^3 are the formula (3) as defined in instant claim 4. Rademacher discloses the release of oligosaccharides from glycoproteins by enzymatic methods (column 1, lines 55-56) such as being hydrolyzed an enzyme such as N-glycanase (column 8, lines 15-20), also named PNGase F and defined by the instant specification as a sugar hydrolase at page 9, lines 5-10. It is well known in the art that the specific enzymatic activity of N-glycanase, or peptide-N^4-(acetyl-β-glucosaminyl)-asparagine amidase [EC 3.5.1.52], is to cleave N-acetyl-glucosamine from an aspargine residue.

Rademacher does not specifically disclose the formation of a uniform glycopeptide composition made by the process of instant claim 7. Rademacher et al. does not specifically teach the peptide being an antibody (instant claim 8).

Wong teaches the glycosylation of proteins using N-glycosyl haloacetamides site specific to a cysteine (abstract), or the thiol group of an amino acid in a peptide. Wong teaches the method of conjugating a defined oligosaccharide to cysteine side chains on a protein provides a finer-tuned strategy for synthetic glycosylation of proteins, and suggests the replacement of natural N-linked glycosylation sites with synthetic cysteine-linked ones (page 849, left column, 2nd paragraph in Discussion section). Wong teaches this method allows one to obtain glycoproteins with homogeneous carbohydrate structures attached (page 849, left column, 2nd paragraph in Discussion section). Wong teaches cysteine-linked oligosaccharides mimic the natural N-linkage and can be released from neoglycoproteins, whereas there is no scheme for the release of unprotected sugars from neoglycoproteins (page 849, left column, 4th paragraph in Discussion section). Wong teaches the conjugation of the protein and the oligosaccharide at pH 8.1 under condition that do not denature a protein (page 844, right column, section Alkylation of peptides and proteins).

Lee et al. teaches it is known in the art to synthesize neoglycoconjugates such as neoglycoproteins by using an endo-N-acetylglucosamidinase that performs both sugar hydrolase and transglycosylation functions (column 1, lines 30-45), or a process that hydolyzes the oligosaccharide and substitutes a new oligosaccharide at the same time.

Wright teaches all antibodies are glycosylated at conserved positions and the presence of carbohydrate can be critical (abstract). Wright teaches antibodies are glycosylated with a Galβ1-4GlcNAcβ1-2Manα1-6(Galβ1-4GlcNAcβ1-2Manα1-3)-Manβ1-4GlcNAcβ1-4(Fuc)-GlcNAc oligosaccharide (page 28, figure 2 at top of page, structure 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Rademacher in view of Wong and further in view of Lee et al. with the teaching of Wright of the peptide being an antibody. Rademacher, Wong, Lee et al. and Wright are all drawn to the field of glycosylation of peptides. One of skill in the art would be motivated to combine Rademacher in view of Wong with the teaching of Wright because Wright teaches all antibodies are glycosylated at conserved positions and the presence of carbohydrate can be critical. One of ordinary skill in the art would have reasonable expectation of success in combining Rademacher in view of Wong with the teaching of Wright because Wright teaches antibodies are glycosylated with an oligosaccharide Galβ1-4GlcNAcβ1-2Manα1-6(Galβ1-4GlcNAcβ1-2Manα1-3)-Manβ1-4GlcNAcβ1-4(Fuc)-GlcNAc which is similar in structure to the oligosaccharide taught by Rademacher Galβ1-4GlcNAcβ1-2Manα1-6(Galβ1-4GlcNAcβ1-2Manα1-3)-Manβ1-4GlcNAcβ1-4GlcNAc. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform a further purification step to produce a uniform glycopeptide composition because the purification of products is routine in the field of chemistry and biochemistry and the desirability of purified products are well understood to one of ordinary skill in the art.

Claim 8, "A glycopeptides prepared according to the process of claim 7, the glycopeptide prepared being an antibody" is drawn to a product-by-process. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (Claim was directed to a novolac color developer. The process of making the developer was allowed. The difference between the inventive process and the prior art was the addition of metal oxide and carboxylic acid as separate ingredients instead of adding the more expensive pre-reacted metal carboxylate. The product-by-process claim was rejected because the end product, in both the prior art and the allowed process, ends up containing metal carboxylate. The fact that the metal carboxylate is not directly added, but is instead produced in-situ does not change the end product.). See MPEP 2113. Though the product taught by Rademacher in view of Wong and further in view of Lee et al. and in view of Wright and in further view of the purification of products that is routine to one of ordinary skill in the art is made by a different process than the instant invention, it is apparent from what is taught that the end product recited in the instant product-by-process claim 8 is rendered obvious.

Response to Applicant's Remarks:

Applicant's Remarks, filed 23 Nov 2009, have been fully considered and not found to be persuasive.

Applicant notes that the process taught by Rademacher in view of Wong and further in view of Lee et al. would result in a non-uniform mixture of glycopeptides. However, with regard to instant claim 8, reciting a product-by-process, it would have been obvious to one of ordinary skill art to perform the purification of products that is routine in the art. MPEP 2113 makes clear that the determination of patentability is based on the product itself, even though the prior product was made by a different process.

It is noted that neither instant claim 7 or 8 recites "the glycopeptides has about 12 times higher resistance to Peptide-N Glycosidase F (PNGase F) than a glycopeptide comprising an asparagine-linked oligosaccharide", as recited in instant claim 4. Therefore this limitation is not found in the product-by-process recited in instant claim 8.

With regard to instant claim 7, Applicant remarks that without knowledge of the property of the glycopeptides having about 12 times higher resistance to Peptide-N Glycosidase F (PNGase F) than a glycopeptide comprising an asparagine-linked oligosaccharide one of ordinary skill in the art would not have combined Rademacher in view of Wong and further in view of Lee et al. However, one of ordinary skill in the art would have been motivated to combine Rademacher in view of Wong and further in view of Lee et al. because Wright teaches antibodies are glycosylated at conserved positions and the presence of carbohydrate can be critical, and Rademacher and Wong teach the site specific glycosylation of proteins. That one of ordinary skill in the art

would have a different reason than Applicant for combining Rademacher in view of Wong and further in view of Lee et al. and in view of Wright does not negate the rationale to support a conclusion of obviousness.

Allowable Subject Matter

Claims 4, 6 and 7 are allowable.

The following is a statement of reasons for the indication of allowable subject matter:

With regard to claims 4, 6 and 7, the closest prior art is detailed above in the section ***Rejections Withdrawn***. Claims 4, 6 and 7 are not taught or fairly suggested by the prior art as detailed therein.

Conclusion

The instant application is not in condition for allowance.

Claims 4, 6 and 7 are allowable. Claim 8 is rejected as detailed herein.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan S. Lau whose telephone number is 571-270-3531. The examiner can normally be reached on Monday - Thursday, 9 am - 4 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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